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# (12) UK Patent Application (19) GB (11) 2 130 275 A

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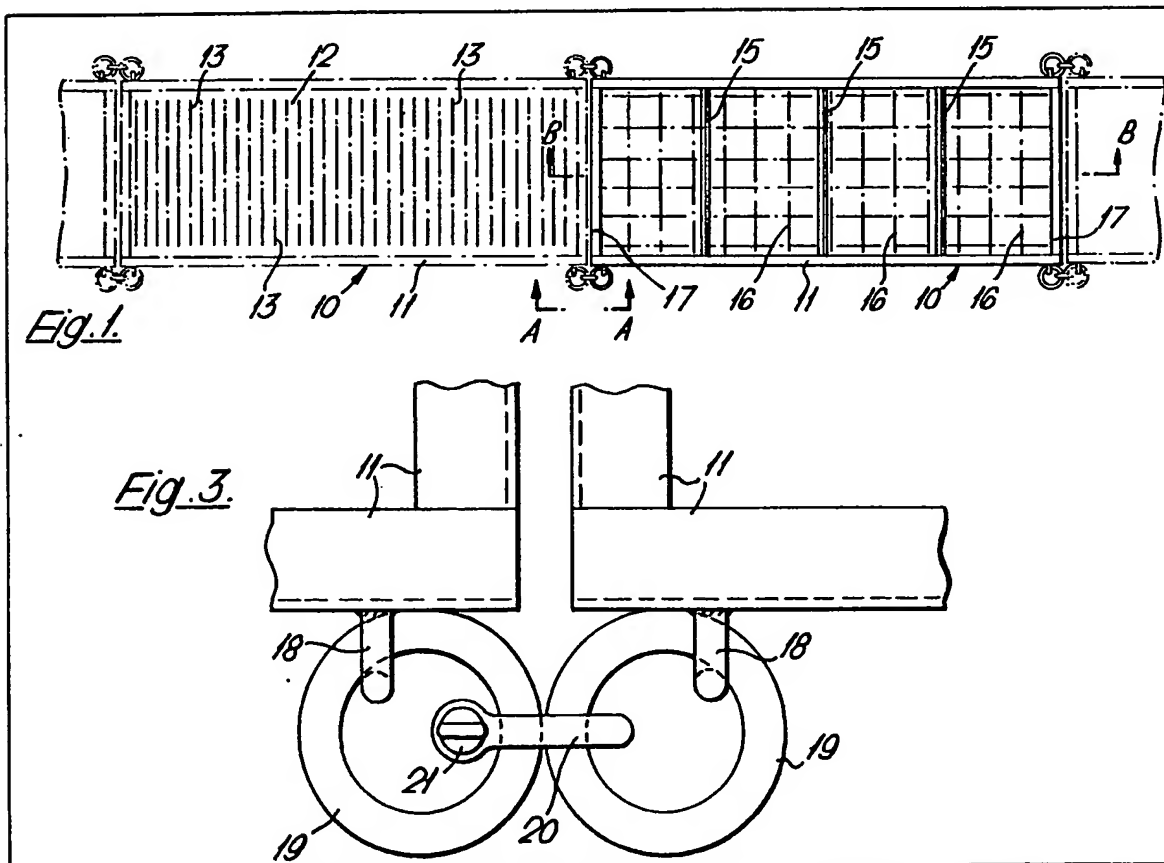
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in a metal channel frame (11), and the slabs being releasably shackled to one another after laying to prevent progressive parting due to vehicle and/or ground movement while at the same time accommodating relative movement between the slabs. As shown each slab has four corner lifting rings 19 retained in eyes 18 welded to the frame 11, adjacent rings 19 being coupled by a shackle 20 and pin 21. In a modification dispensing with the rings 19 the shackle directly couples welded-on elongated eyes.

## (54) Road construction

(57) A temporary road, track or hard standing structure for heavy duty vehicles consists of an array of pre-fabricated slabs (10) laid over the required area, each slab consisting of a block of concrete (12) encased



The drawings originally filed were informal and the print here reproduced is taken from a later filed formal copy.

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Fig. 1.

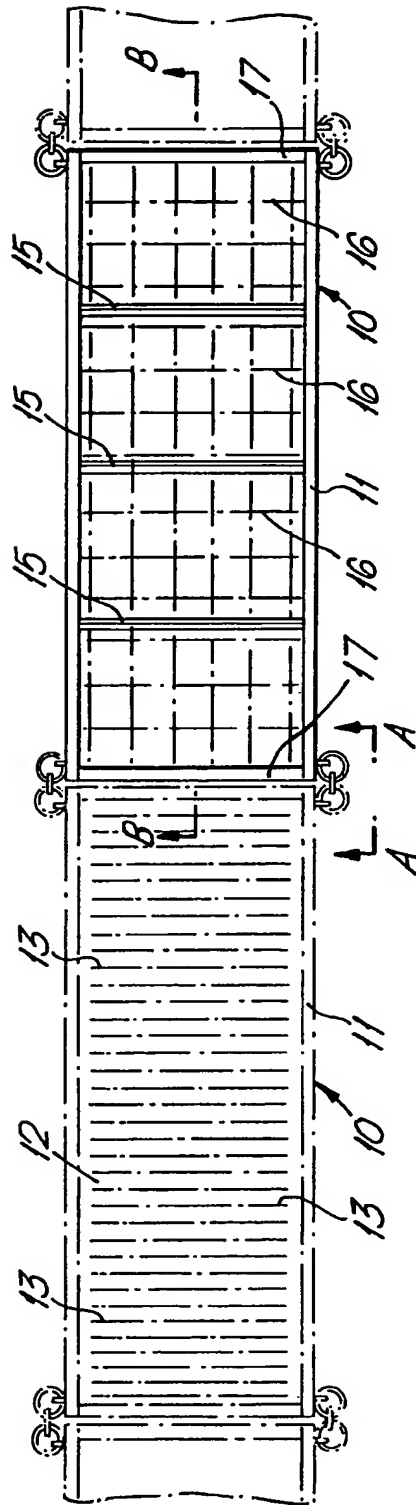
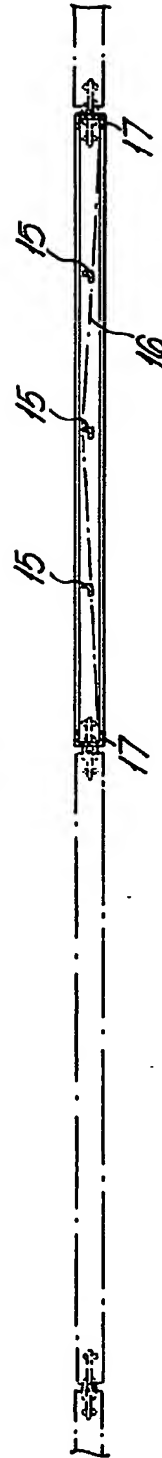
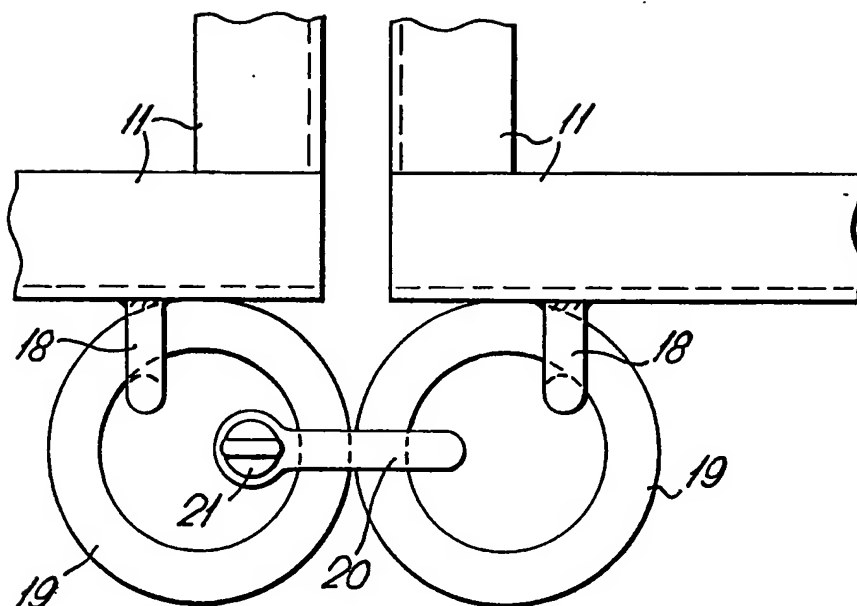


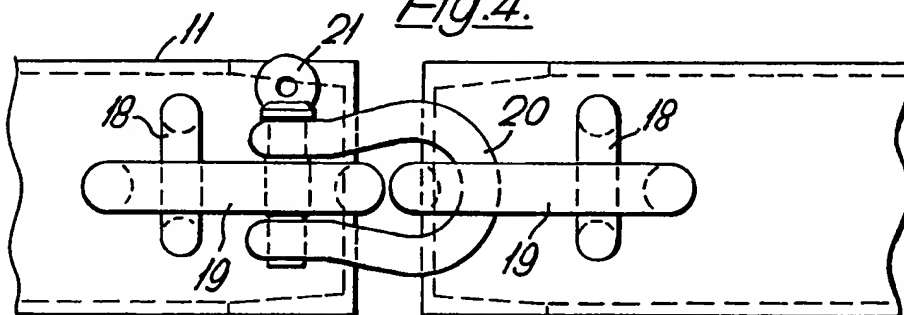
Fig. 2.



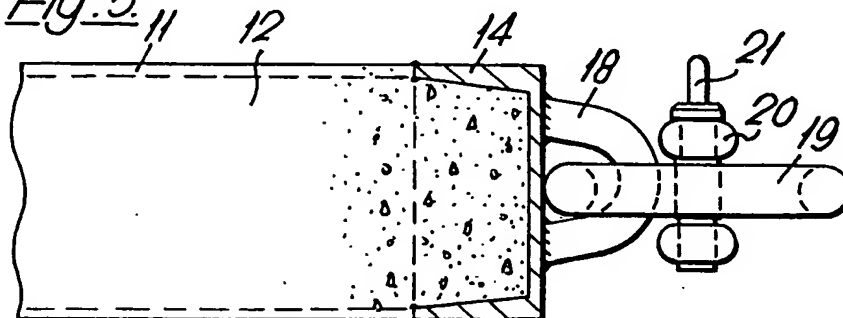
*Fig. 3.*

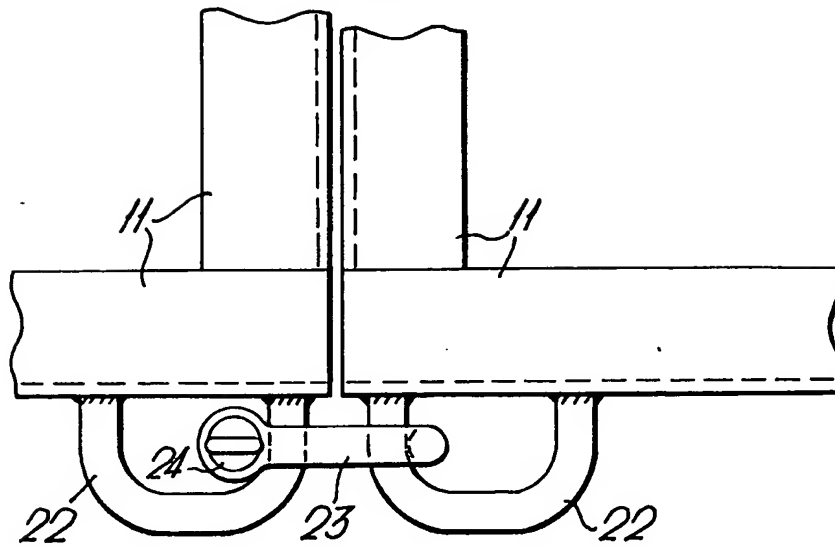
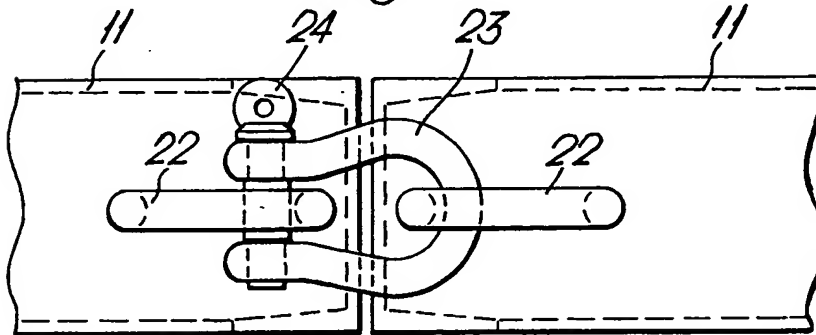
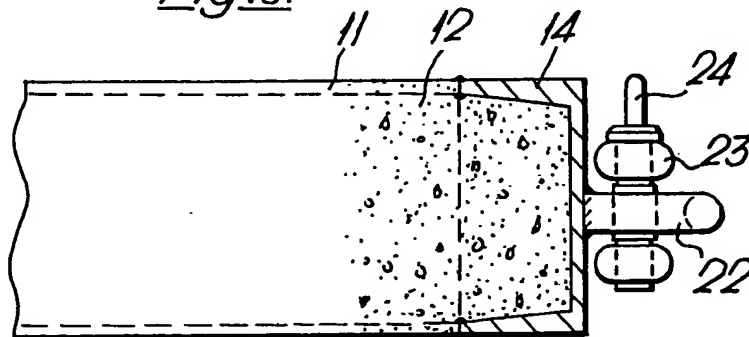


*Fig. 4.*



*Fig. 5.*



*Fig. 6.**Fig. 7.**Fig. 8.*

## SPECIFICATION

### Road construction

- 5 A well known problem during periods of wet weather, especially in winter, is that of operating road vehicles over terrain which does not have a permanent road surface or hard standing. An example of this occurs at refuse disposal sites where it is necessary for bulk haulage lorries and refuse freighters to leave a hard standing area and travel across the site to the disposal area, the location of which varies from time to time.

- 15 At these sites, poor weather conditions often result in vehicles being towed to the disposal area by bulldozers or similar equipment. Vehicles which attempt the passage without assistance frequently get stuck or suffer transmission and/or excessive tyre damage due to wheelspin.

Because the location of the disposal area is not fixed, it is not possible to provide a permanent hard access to it.

- 25 An object of the present invention is to provide access to such an area without forming a permanent road and without the risk of vehicles becoming stuck or requiring assistance in poor weather conditions.
- 30 In accordance with the present invention a temporary road, track, or hard standing for heavy duty vehicles is provided by laying a sequence or an array of discrete, prefabricated, slabs over the required area, and loosely linking the slabs to one another to limit the parting of the slabs and to accommodate relative movement between them.

- Each slab preferably consists of a block of material, such as concrete, encased in a metal frame, the frame and/or the block including pick-up points for attachment to a hoisting mechanism.

- The slabs are preferably laid on a prepared base consisting, for example, of compacted rubble topped with a bedding material.

By way of example only, two embodiments of the invention will now be described with reference to the accompanying drawings in which:—

- 50 *Figure 1* is a plan view of linked road slabs embodying the invention;  
*Figure 2* is a section on B-B in Fig. 1;  
*Figure 3* is a detail of Fig. 1 showing a plan view of a typical linkage;  
55 *Figure 4* is a view on A-A of Fig. 1 showing the linkage of Fig. 3;  
*Figure 5* is a typical section through part of one of the slabs of Fig. 1 and showing an end view of the linkage of Figs. 3 and 4; and  
60 *Figures 6 to 8* correspond to Figs. 3 to 5 but illustrating an alternative linkage mechanism.

- R referring to the drawings, each road slab 10 consists of a rectangular steel framework 65 10 in-filled with 30 N.M. vibrated concrete

12. The surface of the concrete is deep ribbed to provide traction for vehicles moving over the slabs, the ribs 13 running transverse to the length of each slab.

- 70 The steel framework 11 comprises 5" X 2½" rolled steel channel 14, the concrete being keyed into the steel section as shown in Fig. 5. Transverse angles 15 (Figs. 1 and 2) are welded to the longitudinal channel sections to act firstly as frame ties and secondly as supports for a ¼" diameter reinforcing mesh 16. The mesh is welded to the ties 15 and to the inside of the bottom flange 17 of the end channel sections as shown in 80 Fig. 2. This welding takes place before the frame is transported to the location where it is in-filled with concrete. To ensure an adequate thickness of concrete between the surface of the slab and the mesh without lumps of aggregate protruding from the surface, the maximum aggregate size is preferably not greater than 25 mm.

- Each corner of the steel framework 11 is provided with a fixed eye 18 consisting of a 90 20mm. diameter round bar strongly welded to the channel section. Each eye 18 is linked to a lifting/linking ring 19, the ring 19 being of 25mm. diameter round section and having an internal diameter of at least 4 inches.

- 95 Each slab weighs approximately 1.36 tons. To construct a road, track, or hard standing for heavy duty vehicles, a succession of the slabs are lifted and then lowered into position on a prepared base by a crane. Each slab is 100 lifted by attaching the hoist to one or more of the lifting rings 19. Once the slabs have been lowered into position, they are interlinked with one another by shackling adjacent rings 19 to one another as shown in Figs. 3 to 5. Shackling is achieved by means of a ¾" shackle 20 passing through one ring and a shackle pin 21 passing through the other ring.

- The shackling prevents progressive parting of the slabs due to vehicle and/or ground 110 movement while at the same time accommodating movement of the slabs relative to one another.

- An alternative shackling system is shown in Figs. 6 to 8. In this case the fixed eyes 22 115 extend in the longitudinal direction and are positioned so that the eyes themselves can be shackled together by means of a shackle 23 and shackle pin 24.

- The steel frame 11 not only provides the 120 basic frame or mould for the concrete but also provides protection both against chipping or breakage of the concrete when laying or lifting the slabs and against wear and tear on the slab edges caused by the passage of vehicles 125 over the slabs.

- Once the slabs have been laid, any gaps between them can be filled with hard core or asphalt. They may be laid in any desired pattern to produce hard standing or storage 130 areas as well as roads or tracks.

The slabs are reusable and easily transported to new locations. The use of discrete, interlinked, slabs ensures that the travel surface adjusts to uneven settlement and the general contour of the prepared base. This prepared base may consist of compacted rubble topped with suitable bedding material such as hogging, quarry or mining waste, or other inert articulate material.

#### CLAIMS

1. A temporary road, track, or hard standing structure for heavy duty vehicles, the structure comprising a sequence or an array of discrete, prefabricated, slabs laid over the required area, the slabs being loosely linked to one another to limit the parting of the slabs and to accommodate relative movement between them.

2. A structure according to Claim 1 in which each slab comprises a block of material encased in a metal frame, the frame and/or the block including at least one pick-up point for attachment to a hoisting mechanism.

3. A structure according to Claim 2 in which the frame includes at least two pick-up points and the slabs are linked to one another by linking adjacent pick-up points on adjacent slabs.

4. A structure according to Claim 3 in which each pick-up point includes a fixed eye and a loose link passing through the eye, the two loose links of each adjacent pair of pick-up points on adjacent slabs being releasably linked to one another.

5. A structure according to Claim 3 in which each pick-up point includes a fixed eye, and in which adjacent pairs of eyes on adjacent slabs are releasably linked to one another.

6. A method of laying a temporary road, track, or hard standing for heavy duty vehicles, the method comprising laying a sequence or an array of discrete, prefabricated, slabs over the required area, and loosely linking the slabs to one another to limit the parting of the slabs and to accommodate relative movement between them.

7. A slab for use in the method of Claim 6, the slab comprising a block of hard, rigid, cemented material encased in a metal frame, the frame and/or the block including at least one pick-up point for attachment to a hoisting mechanism.

8. A slab according to Claim 7 in which the metal frame is generally rectangular and consists of two end channel sections welded to a pair of opposed longitudinal channel sections, the cemented material being keyed into each of the sections.

9. A slab according to Claim 7 or Claim 8 in which the cemented material comprises concrete.

10. A slab according to Claim 9 in which the aggregate size does not exceed 25mm.

11. A slab according to any one of the Claims 8 to 10 in which the frame is strengthened by means of transverse ties interconnecting the opposed longitudinal members, the ties further supporting a reinforcing mesh for the concrete.

12. A slab according to Claim 11 in which the reinforcing mesh is further secured to the bottom flanges of the end sections, the depth of the mesh within the slab being progressively reduced between the respective bottom flanges and the centre of the slab.

13. A slab according to any one of the Claims 7 to 12 in which the or each pick-up point comprises a fixed eye.

14. A slab according to any one of the Claims 8 to 12 in which the or each pick-up point comprises a fixed eye secured to an outwardly facing surface or a respective one of the channel sections.

15. A temporary road, track or hard standing substantially as herein described with reference to Figs. 1 to 5 of the accompanying drawings.

16. A temporary road, track or hard standing substantially as herein described with reference to Figs. 1 and 2 and Figs. 6 to 8 of the accompanying drawings.

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